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In re Application of
Tadashi Takano

App. No.: 10/707349

Filed: 12/8/2003

Conf. No.: 1348


Title: CONSTRUCTION OF POWER
ASSISTING SYNCHRONOUS MOTOR

Examiner: D. Le

Art Unit: 2834

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Ernest A. Beutler
Reg. No. 19901Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

CORRECTED APPELLANT'S BRIEF

This is in response to the Notice, mailed March 7, 2005.

REAL PARTY IN INTEREST

In addition to the appellant, the real party in interest is his assignee, Kahushiki Kaisha Moric, a Japanese company.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that would have a bearing on or be affected by the decision in this appeal.

STATUS OF CLAIMS

Claims 1 and 3 through 10 remain in this application and all are before the Board on appeal.

STATUS OF AMENDMENTS

An amendment was filed concurrently with the preceding Brief to address the Examiner's well taken rejection under 35 USC 112, and to correct an error in punctuation noted when preparing this brief. It is assumed that this amendment will be entered as it raises no other and new matter. The claims as so amended appear in the Appendix to this Brief in clean form. Other than this all claims appear as Finally Rejected.

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SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1, the only independent claim before the Board is directed to a very compact, low cost, yet very high output synchronous electrical motor. A set forth in this claim, there is provided a compact unit comprised of coil windings, and a large current terminal circuit that is embedded in a body of insulating resin that cooperates with a magnet detector that is carried by an end cap that also carries a bearing for journaling one end of a rotor that carries magnets that cooperate with the poles around which the coils are wound. In addition another end cap is fixed to the resin and carries a bearing for the other end of the rotor shaft.

This structure is described in detail in paragraphs [0017] through [0025] of the specification that refer specifically to FIGS. 1-6 wherein the claimed components are identified by the reference numerals as set out below:

<u>Claimed Element</u>	<u>Part Number</u>
high power synchronous electric motor	11
rotor	12
rotor shaft	17
permanent magnets	19
stator	13
poles	Not illustrated but described in paragraph [0017]
coil windings	Not illustrated but described in paragraph [0017]
high capacity terminal circuit	22
magnet detector	14
resinous body	26
end closures	15,16
bearings	32,42

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REJECTIONS BEFORE THE BOARD

The rejections before the Board are:

1. The rejection of Claims 1 and 3-6 under 35 USC 103(a) on the combined teachings of US Patent 5,864,192 (Nagate et al) in view of both US Patent 6,011,339 (Kawakami) and 1,584,502 (Apple).
2. The rejection of Claims 1 and 3-7 under 35 USC 103(a) on the combined teachings of US Patent 6,011,339 (Kawakami) in view of both US Patent 5,977,671 (Kim) and 4,496,866 (Yamamoto et al).
3. The rejection of Claims 8-10 under 35 USC 103(a) on the combined teachings of US Patent 6,011,339 (Kawakami) in view of both US Patent 5,977,671 (Kim) and 4,496,866 (Yamamoto et al) as applied against claims 1 and 3-7, in further view of US Patent 6,081,056 (Takagi et al).

APPELLANT'S ARGUMENTS

The rejection of Claims 1 and 3-6 under 35 USC 103(a) on the combined teachings of Nagate et al in view of both Kawakami and 1,584,502.

Turning first to the rejection of claim 1 on the Nagate et al, Kawakami and Apple combination appellant would first like to point out the elements of this claim that are lacking in the basic reference Nagate et al that require the application of secondary references. This will be done by setting out those limitations of this claim not found in the reference by the underlined portions of the claim, as set out below:

Claim 1 compared. A high power synchronous electric motor comprised of a rotor having a rotor shaft carrying a plurality of circumferentially spaced permanent magnets, a stator encircling said rotor and comprised of a plurality of poles around which coil windings are formed, a high capacity terminal circuit positioned at one axial end of said poles in circuit with said coil windings, a magnet detector positioned at the other axial end of said poles and cooperating with said permanent magnets for determining the rotational position of said rotor, and a resinous body encasing said poles, said windings, and said high capacity terminal circuit to form a single unit, and end closures carrying bearings for journaling opposite ends of said rotor shaft directly and detachably fixed to said resinous body.

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Thus from the foregoing comparison it should be readily apparent that the reference does not teach what appellant has stated above as the heart of his invention, that being "a compact unit comprised of coil windings, and a large current terminal circuit that is embedded in a body of insulating resin that cooperates with a magnet detector that is carried by an end cap that also carries a bearing for journaling one end of a rotor that carries magnets that cooperate with the poles around which the coils are wound. In addition another end cap is fixed to the resin and carries a bearing for the other end of the rotor shaft." Although the reference describes laminations around which the coils are wound, there is no resinous body to which the end closures 3 and 4 of the reference are directly attached. Rather the end closures appear to clamp the laminations between them. In addition the claimed high capacity terminal circuit is lacking in the basic reference. The Examiner has admitted the failure of the basic reference to show these features and claims that one skilled in the art would modify the reference in light of the secondary references.

In the Kawakami reference the coil windings and their terminal connections are molded into a body that carries directly one bearing for the rotor shaft. The motor does not appear to be brushless and there is no disclosure of any magnet detector. Thus it is hard to discern why one skilled in the art would seek to modify Nagate et al's construction to employ such a complicated and unserviceable motor construction as employed by this reference. Perhaps the Examiner is merely trying to construct the claim language from selected bits and pieces of the art with no teaching of the combination there.

Even this strained combination does not meet the claim language, as admitted by the Examiner in his reliance on Apple to show separate end closures. Again, however, he does not explain why one skilled in the art would make the combination other than the references all relate to the common field of electric motors. There must be more basis in the art than this to make a combination. That is one reference should address a defect in the other to justify a suggestion of obviousness. It is clear from the rejection that the only basis for making the proposed combination is to construct a structure that meets the claim language. The Examiner has not made out a prima facie case of obviousness.

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The rejection of Claim 3 under 35 USC 103(a) on the combined teachings of Nagate et al in view of both Kawakami and 1,584,502

Claim 3 depends on claim 1 and recites the specific structure for the end cap attachment. This is admittedly shown in Apple, but since neither Nagate et al or Kawakami have two separate end closures each of which is detachably connected to a main body it is submitted that the combination not only is not taught or suggested by the art it would violate the teachings of the references to so combine them.

The rejection of Claim 3 under 35 USC 103(a) on the combined teachings of Nagate et al in view of both Kawakami and 1,584,502

Claim 4 depends on claim 1 and further calls for the magnet detector to include a sensor element fixed to the resinous body. The only reference showing a magnet detector is Nagate et al and his is fixed to the end closure. Thus there is no teaching upon which to base this rejection.

The rejection of Claims 5 and 6 under 35 USC 103(a) on the combined teachings of Nagate et al in view of both Kawakami and 1,584,502

Claim 5 depends on claim 4 and specifically defines which end closure carries the magnet detector.

Claim 6 depends on claim 5 and stands or falls with it.

The rejection of Claims 1 and 3-7 under 35 USC 103(a) on the combined teachings of US Patent 6,011,339 (Kawakami) in view of both US Patent 5,977,671 (Kim) and 4,496,866 (Yamamoto et al)

Turning now to the rejection of claim 1 and its dependents on the Kawakami, Kim and Yamamoto et al references, this is also argued to be a further attempt to reconstruct the claim language from bits and pieces of the prior art with no other basis that the art all is directed to electric motors rather than substituting a part of one reference for another's structure with no basic teaching on which to base the substitution. As noted above, the Kawakami reference, although it states that it relates to an electric motor, it shows neither brushes or magnet detectors and relates primarily to the winding connections. Also its molding arrangement is quite complicated and does not lend itself to servicing.

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Claim 1 will again be compared to the reference with the distinctions being underlined.

Claim 1 compared. A high power synchronous electric motor comprised of a rotor having a rotor shaft carrying a plurality of circumferentially spaced permanent magnets, a stator encircling said rotor and comprised of a plurality of poles around which coil windings are formed, a high capacity terminal circuit positioned at one axial end of said poles in circuit with said coil windings, a magnet detector positioned at the other axial end of said poles and cooperating with said permanent magnets for determining the rotational position of said rotor, and a resinous body encasing said poles, said windings, and said high capacity terminal circuit to form a single unit, and end closures carrying bearings for journaling opposite ends of said rotor shaft directly and detachably fixed to said resinous body.

Again the Examiner has admitted the deficiencies of the basic reference and attempts to cure the defects by relying on secondary references absent any teaching to support the substitution or addition. Kim certainly shows a magnet detector, but why would one skilled in the art to place it at a specific position in the basic reference? To make that reference operative? Again it is submitted that the only basis for this combination is an attempt to construct the claim language from bits and pieces of the prior art.

The rejection of Claims 3-7 under 35 USC 103(a) on the combined teachings of US Patent 6,011,339 (Kawakami) in view of both US Patent 5,977,671 (Kim) and 4,496,866 (Yamamoto et al)

The Examiner has also made the broad allegation that the references relied upon in this rejection all have the features claimed in dependent claims 3-7, again without support as argued above and thus the distinctions set out above are incorporated herein by reference and will not be again repeated. Although appellant's attorney agrees with the Examiner as to what the secondary references show, he has no set forth no basis for combining or substituting for defects in the basic reference. Therefore without more, it is submitted that he has made no prima facie case of obviousness and must be reversed. If he more fully supports his position in his answer, appellant will reply.

The rejection of Claims 8-10 under 35 USC 103(a) on the combined teachings of US Patent 6,011,339 (Kawakami) in view of both US Patent 5,977,671 (Kim) and 4,496,866 (Yamamoto et al) as applied against claims 1 and 3-7, in further view of US Patent 6,081,056 (Takagi et al)

Claims 8-10 depend on claim 1 and have been rejected on only the Kawakami, Kim and Yamamoto et al references in further view of Takagi et al. His allegation is that these claims recite only the "insulating material" This makes it either he has not read the claims or fails to understand them.

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Claim 8 specifies the specific details of the connections for the coil wire ends. Kawakami's FIGS. 9-13 show the terminal plates but no detail how they are related to each other but describes them at column 6, lines 57-59 as being stacked together, not as being insulated from each other as claimed.

SUMMARY

Thus it is most respectfully submitted that the Examiner's rejections are merely an attempt to reconstruct appellant's claimed invention from bits and pieces from the prior art absent any suggestion that they all come from the same art of electric motors. He must do more than that to make out a prima facie case of obviousness and absent that a reversal of all of his rejections is solicited.

Respectfully submitted:



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APPENDIX

Clean Copy of The Claims on Appeal

1. A high power synchronous electric motor comprised of a rotor having a rotor shaft carrying a plurality of circumferentially spaced permanent magnets, a stator encircling said rotor and comprised of a plurality of poles around which coil windings are formed, a high capacity terminal circuit positioned at one axial end of said poles in circuit with said coil windings, a magnet detector positioned at the other axial end of said poles and cooperating with said permanent magnets for determining the rotational position of said rotor, and a resinous body encasing said poles, said windings, and said high capacity terminal circuit to form a single unit, and end closures carrying bearings for journaling opposite ends of said rotor shaft directly and detachably fixed to said resinous body.
3. A high power synchronous electric motor as set forth in claim 1, wherein the end closures are affixed to the resinous body by threaded fasteners threaded into inserts retained in said resinous body.
4. A high power synchronous electric motor as set forth in claim 1, wherein the magnet detector includes a sensor element fixed to the other end of the resinous body.
5. A high power synchronous electric motor as set forth in claim 4, wherein the sensor element of the magnet detector is carried by the end closure at the respective end of the rotor shaft.
6. A high power synchronous electric motor as set forth in claim 5, wherein the end closures are affixed to the resinous body by threaded fasteners threaded into inserts retained in said resinous body.
7. A high power synchronous electric motor as set forth in claim 6, further including an end cap affixed to the resinous body and enclosing the end closure carrying the sensor element of the magnet detector.
8. A high power synchronous electric motor as set forth in claim 1, wherein the high capacity terminal circuit is comprised of a plurality of ring shaped sheets surrounding the rotor shaft each having connections to a plurality of the coil windings and being axially spaced from each other and imbedded in an insulating material.
9. A high power synchronous electric motor as set forth in claim 8, wherein the insulating material is embedded in the resinous body.
10. A high power synchronous electric motor as set forth in claim 9, wherein each of the ring shaped sheets has at least one axially extending terminal penetrating through the insulating material to accommodate an external electrical connection.